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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,198	11/17/2003	Seung Hee Nam	8733.936.00-US	9565

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EXAMINER
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QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/713,198	<b>Applicant(s)</b> NAM ET AL.	
	<b>Examiner</b> Mike Qi	<b>Art Unit</b> 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,380,559 B1 (Park et al).

Regarding claim 1, Park discloses (col.6, line 51 – col.13, line 52; Figs.1-5) that a fabrication method of a liquid crystal display panel comprising:

- forming a thin film transistor (3) at crossings of gate lines (22) and data lines (62) formed on a substrate (10);
- a pixel electrode (82);
- a substrate including a plurality of thin film transistor array substrates, such as four panel regions (110,120,130,140) corresponding to four display areas (111,121,131,141) (four thin film transistor array substrates) having a gate line assembly (gate pad part) including a gate pad (24) connected to the gate line (22) and a data line assembly (data pad part) including a data pad (64) connected to the data line (62); and the data line assembly (data pad part) including lower layer (621, 641, metallic material) and upper layer (622, 642, low resistance metallic material), that is the data pad and data pad protection electrode functions to protect the data pad.

Although Park does not explicitly disclose arranging a cutting-off plate on a remainder region of the substrate other than the region of the pad (display area), and exposing the gate pad of the pad part and the data pad protection electrode (peripheral area) by a etching process using the cutting-off plate, Park teaches (col.10, line 26 – col.12, line 67; Figs.9-12) that the etching process using mask (such as mask 300 and 400).

The function of the cutting-off plate is the same as the function of a mask, because the cutting-off plate having open portion and opaque portion that allows the light passing though the open portion; and using mask to expose the gate pad of the pad part and the data pad electrode by etching process using a mask, and arranging a mask on a region to form the pad part, so that the opaque portion on a region of the substrate other than the region of the pad part. Park indicates (col.10, lines 28-45) that the light exposure at the display area D is different from the light exposure at the peripheral area P, such that the molecules at the display area and at the peripheral area being resolved by using mask to a predetermined depth from the surface.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the fabrication method of a liquid crystal display panel of Park with the teachings of arranging a mask (cutting-off plate) and exposing the gate pas and the data pad protection electrode by etching process using the mask (cutting-off plate) as taught by Park, since the skilled in the art would be motivated for obtaining the molecules at the display area and at the peripheral area being resolved by using mask to a predetermined depth from the surface (col.10, lines 28-45).

Regarding claim 2, Park discloses (col.1, lines 13-24) that generally, liquid crystal display is formed with two glass substrates (TFT array substrate and color filter substrate), and the forming method performing photolithography by using mask. Such that the gate pad and the data pad electrode are exposed, and that is a general manufacturing method, and that would have been at least obvious.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,380,559 B1 (Park et al) as applied to claims 1 and 2 above, and further in view of US 6,255,130 B1 (Kim).

Regarding claim 3, Park teaches the invention set forth above except for that the cutting-off plate is made of a metal.

Kim discloses (col.9, lines 49-63; Fig.7B) that a photomask (400) having a plurality of slits (410) (open portion), and a metal Cr layer is coated on the mask (400) to reduce the amount of exposing light.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the fabrication method of a liquid crystal display panel of Park with the teachings of using a metal cutting-off plate as taught by Kim, since the skilled in the art would be motivated for achieving efficiently shield the light exposing in the opaque portion of the cutting-off plate (col.9, lines 60-64).

***Allowable Subject Matter***

4. Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches that a fabrication method of a liquid crystal display panel comprising various steps, more specifically, as the following:

the forming steps using only three masking process: forming a gate insulation film on a substrate, then forming a gate pattern having a gate electrode, gate line connected to gate electrode and gate pad connected to the gate line on the substrate by use of a first masking process; forming a source electrode and a drain electrode, a data line connected to the source electrode, a data pad connected the data line, a storage electrode overlapped with the gate line, a semiconductor pattern in the lower part on the gate insulation film by use of a second masking process; and forming pixel electrode connected to the drain electrode and storage electrode, a transparent electrode pattern having a data pad protection electrode covering the data pad and the protection film (such as passivation film) on the substrate where the transparent electrode is formed by use of a third masking process as shown in Fig.12 [claim 4].

The closest references such as US 6,380,559 B1 (Park et al) and US 6,255,130 B1 (Kim) discloses a fabricating method of a liquid crystal display device using

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photomask process in which the steps are different from this application. The prior art of record discloses using four masking process, such as forming the gate line assembly by using a first mask; forming the data line assembly by using a second mask; then deposited a passivation layer covers the semiconductor layer and the data line assembly using photoresist film coated onto the passivation layer and then exposed to light by using third mask so as to form the semiconductor pattern by etching the passivation layer and underlying semiconductor layer at pixel area; then forming pixel electrode by using a fourth mask. This application adapts three masking process which reduces the fabrication cost and improves the fabrication yield.

### ***Response to Arguments***

6. Applicant's arguments filed Nov.1, 2005 have been fully considered but they are not persuasive.

1) The reference Park teaches (col.10, line 26 –col.12, line 67; Figs.9-12) that the etching process using mask (such as mask 300 and 400). The function of the cutting-off plate is the same as the function of a mask, because the cutting-off plate having open portion and opaque portion that allows the light passing though the open portion; and using mask to expose the gate pad of the pad part and the data pad electrode by etching process using a mask, and arranging a mask on a region to form the pad part, so that the opaque portion on a region of the substrate other than the region of the pad part. Park indicates (col.10, lines 28-45) that the light exposure at the display area D is different from the light exposure at the peripheral area P, such that the molecules at the

display area and at the peripheral area being resolved by using mask to a predetermined depth from the surface.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi  
December 15, 2005

  
ANDREW SCHECHTER  
PRIMARY EXAMINER